

JAPAN

EDICT OF GOVERNMENT

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JIS C 9335-2-15 (2004) (English): Household and similar electrical appliances -- Safety -- Part 2-15: Particular requirements for appliances for heating liquids

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*The citizens of a nation must
honor the laws of the land.*

Fukuzawa Yukichi

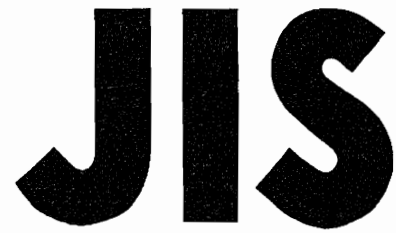
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JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS C 9335-2-15 : 2004
(JEMA)

**Household and similar electrical
appliances—Safety—
Part 2-15 : Particular requirements
for appliances for heating liquids**

ICS 13.120; 97.040.50

Reference number : JIS C 9335-2-15 : 2004 (E)

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Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee, as the result of proposal for revision of Japanese Industrial Standard submitted by The Japan Electrical Manufacturers' Association (JEMA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14. Consequently **JIS C 9335-2-15 : 1998** is replaced with this Standard.

This revision has been made based on **IEC 60335-2-15 : 2002** *Household and similar electrical appliances—Safety—Part 2-15 : Particular requirements for appliances for heating liquids* for the purposes of making it easier to compare this Standard with International Standard; to prepare Japanese Industrial Standard conforming with International Standard; and to propose a draft of an International Standard which is based on Japanese Industrial Standard.

Attention is drawn to the possibility that some parts of this Standard may conflict with a patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have technical properties. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying the patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have the said technical properties.

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Contents

| | Page |
|---|------|
| Introduction | 1 |
| 1 Scope | 1 |
| 2 Normative references | 3 |
| 3 Definitions | 3 |
| 4 General requirement | 4 |
| 5 General conditions for the tests | 4 |
| 6 Classification | 4 |
| 7 Marking and instructions | 4 |
| 8 Protection against access to live parts | 6 |
| 9 Starting of motor-operated appliances | 6 |
| 10 Power input and current | 6 |
| 11 Heating | 6 |
| 12 Void (no specification) | 8 |
| 13 Leakage current and electric strength at operating temperature | 8 |
| 14 Transient overvoltages | 8 |
| 15 Moisture resistance | 8 |
| 16 Leakage current and electric strength | 10 |
| 17 Overload protection of transformers and associated circuits | 10 |
| 18 Endurance | 10 |
| 19 Abnormal operation | 10 |
| 20 Stability and mechanical hazards | 12 |
| 21 Mechanical strength | 12 |
| 22 Construction | 12 |
| 23 Internal wiring | 15 |
| 24 Components | 15 |
| 25 Supply connection and external flexible cords | 16 |

| | | |
|----|--|----|
| 26 | Terminals for external conductors | 16 |
| 27 | Provision for earthing..... | 16 |
| 28 | Screws and connections | 16 |
| 29 | Clearances, creepage distances and solid insulation | 16 |
| 30 | Resistance to heat and fire..... | 17 |
| 31 | Resistance to rusting | 17 |
| 32 | Radiation, toxicity and similar hazards | 17 |
| | Annexes | 18 |
| | Annex C (normative) Ageing test on motors | 18 |
| | Annex 1 (informative) Comparison table between JIS and corresponding International Standard | 19 |
| | Bibliography..... | 28 |

Household and similar electrical appliances—Safety— Part 2-15 : Particular requirements for appliances for heating liquids

Introduction This Japanese Industrial Standard has been prepared based on IEC 60335-2-15 *Household and similar electrical appliances—Safety—Part 2-15 : Particular requirements for appliances for heating liquids* published in 2002 as the fifth edition with some modifications in the technical contents. This is to be read in conjunction with JIS C 9335-1 : 2003 *Household and similar electrical appliances—Safety—Part 1 : General requirements*.

In this Standard, the portions underlined with dots mean the alteration of original International Standard. The list of alterations is given in annex 1 (informative) with the explanation being attached.

1 Scope This Standard deals with the safety of electrical appliances for heating liquids for household and similar purposes, their rated voltage being not more than 250 V.

NOTE 101 Some appliances may be used for heating food.

NOTE 102 Examples of appliances that are within the scope of this Standard are

- coffee-makers;
- cooking pans;
- egg boilers;
- feeding-bottle heaters;
- kettles and other appliances for boiling water, having a rated capacity not exceeding 10 L;
- milk heaters;
- pressure cookers having a rated cooking pressure not exceeding 140 kPa and a rated capacity not exceeding 10 L;
- slow cookers;
- steam cookers;
- wash boilers;
- yoghurt makers;
- rice cookers;
- electric thermal insulation pots.

Appliances not intended for normal household use but which nevertheless may be a source of danger to the public, such as appliances intended to be used by laymen in shops, in light industry and on farms, are within the scope of this Standard.

NOTE 103 Examples of such appliances are

- glue pots with a water jacket (overheat cooling device);
- livestock feed boilers;
- sterilizers.

As far as is practicable, this Standard deals with the common hazards presented by appliances that are encountered by all persons in and around the home.

NOTE 104 Attention is drawn to the fact that

- for appliances intended to be used in vehicles or on board ships or aircraft, additional requirements may be necessary;
- in many countries, additional requirements are specified by the national health authorities, the national authorities responsible for the protection of labour, the national water supply authorities and similar authorities.

NOTE 105 This Standard does not apply to

- frying pans and deep fat fryers (**JIS C 9335-2-13**);
- storage water heaters (**JIS C 9335-2-21**);
- instantaneous water heaters (**JIS C 9335-2-35**);
- surface-cleaning appliances employing liquids or steam (**JIS C 9335-2-54**);
- portable immersion heaters (**JIS C 9335-2-74**);
- commercial dispensing appliances and vending machines (**JIS C 9335-2-75**);
- appliances for medical purposes (**IEC 60601**);
- appliances intended exclusively for industrial purposes;
- appliances intended to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere (dust, vapour or gas);
- appliances for high-frequency heating;
- pressure sterilizer.

NOTE 106 Attention is drawn to the fact that in many countries requirements for pressure vessels are applied to pressure cookers.

NOTE : The International Standard corresponding to this Standard is as follows.

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standard and **JIS** are IDT (identical), MOD (modified), and NEQ (not equivalent) according to **ISO/IEC Guide 21**.

IEC 60335-2-15 *Household and similar electrical appliances—Safety—Part 2-15 : Particular requirements for appliances for heating liquids* (MOD)

2 Normative references Normative references are as stated in clause 2 of JIS C 9335-1.

3 Definitions Definitions are as stated in clause 3 of JIS C 9335-1 except as follows.

3.1.9 Replacement

normal operation operation of the appliance under the following conditions

3.1.9.101 Kettles and other appliances for boiling water, coffee-makers, cooking pans, glue pots, milk heaters, slow cookers, sterilizers, wash boilers and yoghurt makers are operated with their container filled with the rated capacity of water, any lid being closed. The quantity of water in slow cookers is maintained above 50 % of their rated capacity.

Appliances with a heated surface intended to keep the liquid warm are operated with or without the container, whichever is the more unfavourable.

3.1.9.102 Egg boilers and steam cookers are operated with their containers filled with the maximum quantity of water specified in the instructions.

3.1.9.103 Feeding-bottle heaters are operated with a bottle of heat-resistant glass, round or hexagonal in shape, having a mass between 190 g and 200 g and a capacity of approximately 225 ml, unless a particular bottle is specified, in which case that bottle is used. The bottle is filled to approximately its rated capacity of water or 200 ml, whichever is less, and is placed in the feeding-bottle heater. The heater is filled with water to the level specified in the instructions or, in the absence of instructions, to the maximum level.

3.1.9.104 Livestock feed boilers are operated with the lid closed, the container being filled with half its rated capacity of water.

3.1.9.105 Pressure cookers excluding rice cookers are operated in accordance with the instructions but with the container filled with water to a depth of 25 mm.

3.101 rated capacity capacity assigned to the appliance by the manufacturer

3.102 rated cooking pressure pressure assigned to the appliance by the manufacturer

3.103 espresso coffee-maker coffee-maker in which water is heated and forced through the ground coffee by steam pressure or by means of a pump

NOTE : Espresso coffee-makers may have an outlet for supplying steam or hot water.

3.104 feeding-bottle heater appliance for heating prepared baby food in a feeding-bottle to a predetermined temperature, heat being transferred by means of water

3.105 pressure regulator control that maintains the pressure at a particular value during normal use

3.106 pressure-relief device control that limits the pressure under abnormal operating conditions

3.107 cordless kettle kettle incorporating a heating element and which is connected to the supply only when placed on its associated stand

3.108 steam cooker appliance in which food is heated by steam generated at atmospheric pressure

3.201 rice cooker appliance which mainly cooks automatically utilizing electric heat. Appliance having function to keep the temperature is included

3.202 electric thermal insulation pot appliance which consists of integrated heater and container, boils water utilizing electric heat, then automatically transfers to function for keeping the temperature

4 General requirement General requirement shall be as stated in clause 4 of JIS C 9335-1.

5 General conditions for the tests General conditions for the tests shall be as stated in clause 5 of JIS C 9335-1 except as follows.

5.2 Addition to 5.2 of JIS C 9335-1:

NOTE 101 If the test of 15.101 has to be carried out, three additional samples are required.

5.3 Addition to 5.3 of JIS C 9335-1:

The test of 19.101 is carried out after the other tests.

6 Classification Classification shall be as stated in clause 6 of JIS C 9335-1 except as follows.

6.2 Addition to 6.2 of JIS C 9335-1:

Wash boilers and livestock feed boilers shall be at least IPX3.

7 Marking and instructions Marking and instructions shall be as stated in clause 7 of JIS C 9335-1 except as follows.

7.1 Addition to 7.1 of JIS C 9335-1:

Appliances intended to be partially immersed in water for cleaning shall be marked with the maximum level of immersion and with the substance of the following:

Do not immerse beyond this level.

Kettles and electric thermal insulation pots shall have a level mark or other means to indicate when they are filled to rated capacity, unless they cannot be filled beyond their rated capacity or withstand the test of 15.2 when filled completely. This indication shall be visible when the kettle or electric thermal insulation pot is in the filling position. If the level mark is not self-evident, there shall be a reference to this mark on the outside of the kettle or electric thermal insulation pot which shall be visible when the kettle or electric thermal insulation pot is in its normal position of use.

If the closed position of the lid of a pressure cooker is not obvious, this position shall be marked on the appliance.

Stands provided with cordless kettles shall be marked with

- the name, trademark or identification mark of the manufacturer or responsible vendor;
- the model or type reference.

7.12 Addition to 7.12 of JIS C 9335-1:

The instructions for appliances incorporating an appliance inlet, and intended to be partially or fully immersed in water for cleaning, shall state that the connector must be removed before the appliance is cleaned and that the appliance inlet must be dried before the appliance is used again.

The instructions for appliances intended to be used with a connector incorporating a thermostat shall state that only the appropriate connector must be used.

Unless kettles and electric thermal insulation pots are constructed so that a hazard cannot arise from boiling water being ejected, the instructions shall state that if the kettle or electric thermal insulation pot is overfilled, boiling water may be ejected.

The instructions for kettles and electric thermal insulation pots filled through a lid aperture situated below the handle shall include the substance of the following:

WARNING : Position the lid so that steam is directed away from the handle.

NOTE 101 The warning is not required if the lid can only be closed so that steam is directed away from the handle.

WARNING : Do not remove the lid while the water is boiling.

The instructions for cordless kettles shall state that the kettle is only to be used with the stand provided.

If the kettle, electric thermal insulation pot or stand of cordless kettles can be lifted together by gripping the handle of the kettle, the instructions shall include the substance of the following:

CAUTION : Insure that the kettle is switched off before removing it from its stand.

The instructions for feeding-bottle heaters shall state

- that the food should not be heated for too long;
- how to check that the correct food temperature has not been exceeded.

The instructions for appliances normally cleaned after use, and not intended to be immersed in water for cleaning, shall state that the appliance must not be immersed.

NOTE 102 This requirement normally applies to coffee-makers, cooking pans, milk heaters, pressure cookers, steam cookers, slow cookers and yoghurt makers.

The instructions for pressure cookers shall state that the ducts in the pressure regulator allowing the escape of steam should be checked regularly to ensure that they are not blocked. They shall also give details of how to open the container safely and state that the container must not be opened until the pressure has decreased sufficiently.

The instructions for egg boilers provided with a pricking device shall contain the substance of the following:

CAUTION : Avoid injuries from the egg pricker.

8 Protection against access to live parts Protection against access to live parts shall be as stated in clause 8 of **JIS C 9335-1** except as follows.

8.1.2 Addition to 8.1.2 of **JIS C 9335-1**:

NOTE : Connecting devices in stands of cordless kettles are not considered to be socket-outlets.

9 Starting of motor-operated appliances Clause 9 of **JIS C 9335-1** is not applicable.

10 Power input and current Power input and current shall be as stated in clause 10 of **JIS C 9335-1**.

11 Heating Heating shall be as stated in clause 11 of **JIS C 9335-1** except as follows.

11.2 Addition to 11.2 of **JIS C 9335-1**:

Portable appliances are tested away from the walls of the test corner.

11.4 Addition to 11.4 of **JIS C 9335-1**:

If the temperature rise limits are exceeded in appliances incorporating motors, transformers or electronic circuits, and if the power input is lower than the rated power input, the test is repeated with the appliance supplied at 1.06 times the rated voltage.

11.6 Addition to 11.6 of **JIS C 9335-1**:

Combined appliances are operated as heating appliances.

11.7 Replacement of 11.7 of **JIS C 9335-1**:

Appliances are operated for the duration specified in 11.7.101 to 11.7.105.

11.7.101 For kettles incorporating a temperature limiter, the temperature limiter is reset 1 min after it has operated or as soon as possible afterwards. The test is terminated after the temperature limiter has operated for the second time.

For kettles incorporating a thermostat, the test is terminated 15 min after the water has attained a temperature of 95 °C.

For other kettles the test is terminated 5 min after the water has attained a temperature of 95 °C.

11.7.102 For appliances for boiling water other than kettles, cooking pans, egg boilers, feeding-bottle heaters, glue pots, livestock feed boilers, milk heaters, sterilizers and wash boilers, the test is terminated

- for appliances without a thermal control, 15 min after the water in the container has attained a temperature of 95 °C or the maximum temperature it can attain if this is lower;
- for portable appliances provided with a thermal control, 15 min after the thermal control has operated for the first time;
- for fixed appliances provided with a thermal control, 30 min after the thermal control has operated for the first time;
- 1 min after a continuous or repetitive acoustic signal having intervals of less than 5 s has sounded;
- when steady conditions are established, for egg boilers having provision for keeping eggs warm, and appliances having a heated surface intended to keep liquid warm.

11.7.103 Slow cookers, steam cookers and yoghurt makers are operated until steady conditions are established. Slow cookers are prewarmed in the dry state if this instruction is given.

11.7.104 Espresso coffee-makers are operated in accordance with the instructions, the coffee filter being filled with the maximum quantity of coffee of the type specified. The brewing period is followed by a rest period of 1 min or the period stated in the instructions, if this is longer. The water container is refilled during the rest periods.

For espresso coffee-makers having an outlet for supplying steam or hot water, the brewing period is immediately followed by a period during which the steam or water is supplied for the time stated in the instructions.

NOTE : The steam is blown into a vessel containing cold water.

Espresso coffee-makers are operated until steady conditions are established.

Other coffee-makers are operated for the time necessary to make the maximum quantity of coffee stated in the instructions. The container is then refilled as quickly as possible and the coffee-maker operated again.

The procedure is repeated until steady conditions are established.

11.7.105 Pressure cookers excluding rice cookers are operated for 15 min after attaining the maximum cooking pressure.

11.8 Addition to 11.8 of JIS C 9335-1:

When an appliance connector incorporates a thermostat, the temperature rise limit for the pins of the inlet does not apply.

The temperature rise limits of motors, transformers and components of electronic circuits, including parts directly influenced by them, may be exceeded when the appliance is operated at 1.15 times rated power input.

12 Void (no specification)

13 Leakage current and electric strength at operating temperature Leakage current and electric strength at operating temperature shall be as stated in clause 13 of JIS C 9335-1.

14 Transient overvoltages Transient overvoltages shall be as stated in clause 14 of JIS C 9335-1.

15 Moisture resistance Moisture resistance shall be as stated in clause 15 of JIS C 9335-1 except as follows.

15.2 Addition to 15.2 of JIS C 9335-1:

The test is only carried out with the appliance connector in position.

In case of doubt, the spillage test is carried out with the appliance deviating from the normal position of use by an angle not exceeding 5°.

Kettles that can be filled through the spout are also tested on a plane inclined at an angle of 20° to the horizontal, with the spout uppermost. The kettle is filled with water containing approximately 1 % NaCl to the maximum level, if this indication is visible from the filling position, otherwise until water spills from the kettle. A further quantity, equal to 15 % of the rated capacity of the kettle, is then added as quickly as possible.

For cordless kettles, the test with the kettle on the horizontal plane is carried out with the kettle both on and off its stand. The additional test for kettles that can be filled through the spout is carried out only with the cordless kettle off its stand, the kettle being replaced on its stand in order to carry out the electric strength test of 16.3.

15.101 Appliances intended to be partially or completely immersed in water for cleaning shall have adequate protection against the effects of immersion.

Compliance is checked by the following tests, which are carried out on three additional appliances.

The appliances are operated under normal operation at 1.15 times rated power input, until the thermostat operates for the first time. Appliances without a thermostat are operated until steady conditions are established. The appliances are disconnected from the supply, any appliance connector being withdrawn. They are then completely immersed in water containing approximately 1 % NaCl and having a temperature between 10 °C and 25 °C, unless they are marked with the maximum level of immersion, in which case they are immersed 50 mm deeper than this level.

After 1 h, the appliances are removed from the saline solution, dried and subjected to the leakage current test of **16.2**.

NOTE : Care is taken to ensure that all moisture is removed from the insulation around the pins of appliance inlets.

This test is carried out four more times, after which the appliances shall withstand the electric strength test of **16.3**, the voltage being as specified in table 4.

The appliance having the highest leakage current after the fifth immersion is dismantled and inspection shall show that there is no trace of liquid on insulation that could result in a reduction of clearances and creepage distances below the values specified in clause **29**.

The remaining two appliances are operated under normal operation at 1.15 times rated power input for 240 h. After this period, the appliances are disconnected from the supply and immersed again for 1 h. They are then dried and subjected to the electric strength test of **16.3**, the voltage being as specified in table 4.

Inspection shall show that there is no trace of liquid on insulation that could result in a reduction of clearances and creepage distances below the values specified in clause **29**.

15.102 The connecting devices of stands for cordless kettles shall not be affected by water.

Compliance is checked by the following test.

The stand is placed on a horizontal surface and 30 ml of water containing approximately 1 % NaCl is poured onto the connecting device from a height of 200 mm. The solution is poured steadily through a tube having an inner diameter of 8 mm over a period of 2 s.

The stand shall then withstand the electric strength test of **16.3**, the test voltage for reinforced insulation being 2 500 V.

15.201 For appliances in which the container can be attached and detached shall be so constructed that the appliance is not affected by water with the container removed.

Compliance is checked by the following test.

With the container removed 100 ml of water is poured onto the part according to the procedures given below.

The rice cooker is placed horizontally, and the water is poured onto the centre of rice cooker by means of the device shown in figure 1. This test is carried out while the appliance body is under cold state.

Unit: mm

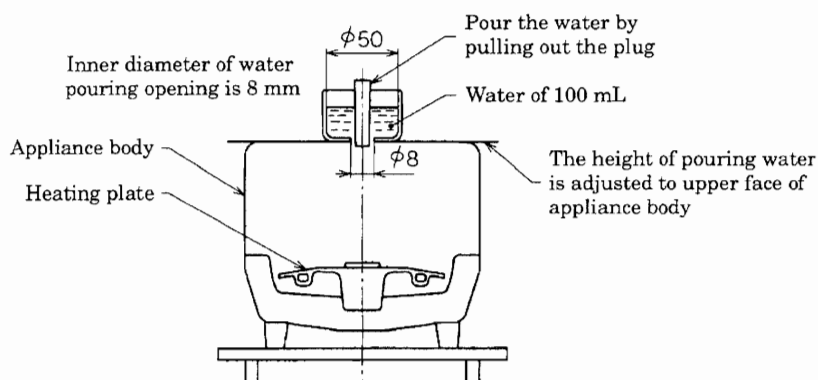


Figure 1 Water pouring test

Immediately after the above treatment, the appliance shall withstand the electric strength test specified in 16.3, and the inspection shall show that there is no trace of water on insulation that could result in a reduction of clearances and creepage distances below the values specified in clause 29.

16 Leakage current and electric strength Leakage current and electric strength shall be as stated in clause 16 of JIS C 9335-1.

17 Overload protection of transformers and associated circuits Overload protection of transformers and associated circuits shall be as stated in clause 17 of JIS C 9335-1.

18 Endurance Clause 18 of JIS C 9335-1 is not applicable.

19 Abnormal operation Abnormal operation shall be as stated in clause 19 of JIS C 9335-1 except as follows.

19.1 Addition to 19.1 of JIS C 9335-1:

Kettles are not subjected to the test of 19.2.

Kettles are also subjected to the test of 19.101, unless the appliance incorporates a non-self-resetting thermal cut-out that is not resettable by the user, in order to comply with 19.4.

Kettles for which compliance with 19.101 relies on the operation of a self-resetting thermal cut-out are also subjected to the test of 19.102.

19.2 Addition to 19.2 of JIS C 9335-1:

Appliances are placed as near as possible to the walls of the test corner. They are tested empty with lids open or closed whichever is more unfavourable.

19.3 Addition to 19.3 of JIS C 9335-1:

Kettles and electric thermal insulation pots are operated empty at 1.15 times rated power input.

The test is also carried out with the kettle or electric thermal insulation pot filled with sufficient water to cover the heating element, or to a depth of 10 mm if the heating element is not positioned inside the container, the lid being open or closed, whichever is more unfavourable.

19.4 Addition to 19.4 of JIS C 9335-1:

Pressure regulators of pressure cookers are rendered inoperative together with each protective device in turn.

19.7 Addition to 19.7 of JIS C 9335-1:

Espresso coffee-makers incorporating a pump are operated for a period of 5 min.

19.13 Addition to 19.13 of JIS C 9335-1:

During the test of 19.4, pressure-relief devices of pressure cookers shall operate before the pressure has reached 350 kPa.

19.101 Kettles are placed on a plywood board having a thickness of approximately 20 mm. The thermal cut-out that operates during the test of 19.4 is short circuited and the kettle is operated empty at 0.85 times rated power input or 1.15 times rated power input, whichever is more unfavourable.

During the test, any flames shall be kept within the enclosure of the kettle and the supporting surface shall not ignite.

After the test, live parts shall not be accessible.

NOTE 1 If the kettle incorporates more than one thermal cut-out that could operate during the test of 19.4, they are short circuited in turn.

NOTE 2 19.13 is not applicable.

19.102 Kettles incorporating two self-resetting thermal cut-outs are operated with one of the thermal cut-outs short circuited. The kettle is operated empty at 0.85 times rated power input or 1.15 times rated power input, whichever is more unfavourable.

Within 2 s of the other thermal cut-out operating, the kettle is filled with water having a temperature of $15\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$. After 1 min, the kettle is emptied.

The test is carried out 100 times.

NOTE : 19.13 is applicable.

19.103 For appliances with detachable liquid containers, the automatic transfer of liquid from one container to another shall not give rise to an electrical hazard if they are incorrectly positioned.

Compliance is checked by assembling the appliance with its receiving container incorrectly positioned or removed. The water discharge pipe is incorrectly positioned if this is more unfavourable. The appliance is operated as specified in clause 11 but for one cycle only.

The appliance shall then withstand the electric strength test of **16.3** and inspection shall show that there is no trace of water on insulation that could result in the reduction of clearances and creepage distances below the values specified in clause **29**.

20 Stability and mechanical hazards Stability and mechanical hazards shall be as stated in clause **20** of **JIS C 9335-1**.

21 Mechanical strength Mechanical strength shall be as stated in clause **21** of **JIS C 9335-1** except as follows.

NOTE : Breakage of glass parts is neglected provided that compliance with **8.1**, **15.1** and **15.101** is not impaired.

22 Construction Construction shall be as stated in clause **22** of **JIS C 9335-1** except as follows.

22.6 Addition to 22.6 of JIS C 9335-1:

Drain holes shall be at least 5 mm in diameter or 20 mm² in area with a width of at least 3 mm.

Compliance is also checked by measurement.

22.7 Addition to 22.7 of JIS C 9335-1:

Espresso coffee-makers are filled with water to their rated capacity and operated at rated power input with the coffee filter blocked and any valve for the supply of steam closed. The maximum pressure attained is measured. The appliance is then subjected to twice the measured pressure for 5 min.

NOTE 101 The overpressure may be supplied from an external source, care being taken to ensure that the espresso coffee-maker is at the normal temperature for brewing.

NOTE 102 If the valve for steam supply is linked to the switch used for starting the production of steam, this link is not to be disturbed while measuring the maximum pressure.

NOTE 103 Adequate safeguards have to be taken to avoid risks due to explosion.

The appliance shall not rupture, there shall be no leakage other than through a self-resetting pressure-relief device and the appliance shall be suitable for further use.

Controls that limit the pressure are rendered inoperative and the appliance is operated again as described for determining the maximum pressure.

The appliance shall not explode or emit hazardous jets of steam. If an intentionally weak part ruptures, the test is repeated on a second appliance and shall be terminated in the same mode.

All pressure regulators and pressure-relief devices of pressure cookers are rendered inoperative and the lid is closed. The pressure is gradually increased hydraulically to six times the rated cooking pressure. The container shall not rupture.

22.101 Kettles and electric thermal insulation pots shall be constructed so that the lid does not fall off when water is poured out.

Compliance is checked by the following test.

The kettle and electric thermal insulation pot are filled to its rated capacity and the lid closed in accordance with the instructions. The kettle and electric thermal insulation pot are supplied at rated voltage and operated until the water boils. Approximately 90 % of the water is poured from the kettle and electric thermal insulation pot in the normal way. The lid shall not fall off and water shall only be emitted from the spout.

22.102 Kettles and electric thermal insulation pots shall be constructed so that there are no sudden jets of steam or hot water likely to expose the user to a hazard when the appliance is used as in normal use.

NOTE : Normal use takes into account the instructions concerning the position of the lid and the likely position of the user's hands when gripping the handle.

Compliance is checked by inspection during the test of clause 11.

22.103 The appliance coupler of cordless kettles shall be constructed to withstand the stresses occurring during normal use.

Compliance is checked by the following test.

The two live pins of the kettle are connected together and an external resistive load is connected in series with the supply. The external load is such that the current is 1.1 times rated current.

The kettle is placed on its stand and withdrawn 10 000 times at a rate of approximately 10 times per minute. The test is continued for a further 10 000 times without current flowing.

After the test, the kettle shall be suitable for further use and compliance with 8.1, 16.3, 27.5 and clause 29 shall not be impaired.

The test is carried out without current flowing if the connection contacts cannot make or break on load.

22.104 Portable appliances for boiling water that have a rated capacity exceeding 3 L, and which are liable to overturn, shall be constructed so that the rate of discharge is limited.

Compliance is checked by the following test, appliances incorporating an appliance inlet being fitted with a cord set.

The appliance is filled with water to its rated capacity and the lid closed in accordance with the instructions. It is placed on a horizontal plane in any position of normal use but orientated to produce the most unfavourable result.

The plane is slowly inclined to an angle of 25°. If the appliance overturns, it is left in this position for 10 s and then returned to its normal position. The quantity of water remaining is measured. The rate of discharge of water is determined from the formula:

$$D = \frac{60(C_1 - C_2)}{t}$$

where

D is the rate of discharge of water;

C_1 is the rated capacity in litres;

C_2 is the remaining quantity of water in litres;

t is the duration of the discharge in seconds, measured from the time the appliance overturns.

The rate of discharge of water shall not exceed 16 L/min.

NOTE : Suitable means may be used to prevent the appliance from slipping on the inclined plane.

22.105 Fixed appliances for boiling water shall be constructed so that the container is always open to the atmosphere through an aperture of at least 5 mm in diameter, or 20 mm² in area with a width of at least 3 mm. The aperture shall be located so that it is unlikely to be obstructed in normal use.

If the appliance has provision for discharging steam or for water overflow, the discharge aperture shall be at the base of the appliance and shall discharge vertically downwards.

Compliance is checked by inspection and by measurement.

22.106 Espresso coffee-makers shall be constructed so that it is not possible to remove the coffee filter by a simple operation while there is a hazardous pressure within the container.

NOTE : This requirement is considered to be met if the coffee filter can only be removed after it has been rotated through an angle of at least 30°.

Compliance is checked by inspection and by manual test.

22.107 Pressure cookers shall incorporate a non-self-resetting pressure or temperature responsive pressure-relief device.

Compliance is checked by inspection.

22.108 Pressure cookers shall be constructed so that the lid cannot be removed while the pressure within the container is excessive. They shall incorporate a means to release the pressure to a value such that the lid can be removed without risk.

Compliance is checked by the following test.

The pressure cooker is operated as specified in clause 11 until the pressure regulator operates for the first time.

The pressure cooker is then disconnected from the supply and the pressure allowed to decrease until the pressure is 4 kPa. A force of 100 N is applied to the most unfavourable point where the lid or its handle can be gripped. It shall not be possible to remove the lid.

The internal pressure is then gradually reduced, the force of 100 N being maintained. There shall be no hazardous displacement of the lid when it is released.

This test is not carried out on pressure cookers when the lid is secured by screw clamps or other devices that ensure that the pressure is automatically reduced in a controlled manner before the lid can be removed.

22.109 Feeding-bottle heaters shall emit a visible or audible signal to indicate that the heating period is terminated.

Compliance is checked by inspection during the test of clause 11.

23 Internal wiring Internal wiring shall be as stated in clause 23 of JIS C 9335-1.

24 Components Components shall be as stated in clause 24 of JIS C 9335-1 except as follows.

24.1.3 Addition to 24.1.3 of JIS C 9335-1:

Switches incorporated in espresso coffee-makers for initiating brewing or steaming are subjected to 10 000 cycles of operation.

24.1.4 Addition to 24.1.4 of JIS C 9335-1:

Self-resetting thermal cut-outs required for compliance with the test of 19.101 are subjected to 3 000 cycles of operation.

24.1.5 Addition to 24.1.5 of JIS C 9335-1:

For appliance couplers incorporating thermostats, thermal cut-outs or fuses in the connectors, IEC 60320-1 is applicable except that

- the earthing contact of the connector is allowed to be accessible, provided that this contact is not likely to be gripped during insertion or withdrawal of the connector;
- the temperature required for the test of clause 18 is that measured on the pins of the appliance inlet during the test of clause 11 of this Standard;
- the breaking-capacity test of clause 19 is carried out using the inlet of the appliance;
- the temperature rise of current-carrying parts specified in clause 21 is not determined.

NOTE 101 Thermal controls are not allowed in connectors complying with the standard sheets of IEC 60320-1.

24.4 Addition to 24.4 of JIS C 9335-1:

NOTE : This requirement is not applicable to the connection between the kettle and the stand of cordless kettles.

24.101 Devices incorporated in appliances, other than kettles, for compliance with 19.4, shall be non-self resetting. However, self-resetting thermal cut-outs are allowed for fixed water boilers if they have been subjected to 10 000 cycles of operation.

Compliance is checked by inspection and during the test of 19.4.

25 Supply connection and external flexible cords Supply connection and external flexible cords shall be as stated in clause **25** of **JIS C 9335-1** except as follows.

25.1 Addition to **25.1** of **JIS C 9335-1**:

Appliances incorporating an appliance inlet, other than those standardized in **IEC 60320-1**, shall be supplied with a cord set.

25.5 Addition to **25.5** of **JIS C 9335-1**:

Type Z attachment is allowed for egg boilers, feeding-bottle heaters, steam sterilizers, yoghurt makers and stands of cordless kettles.

25.7 Addition to **25.7** of **JIS C 9335-1**:

The supply cord of livestock feed boilers shall be polychloroprene sheathed.

25.8 Addition to **25.8** of **JIS C 9335-1**:

Portable appliances having a rated current up to 10 A may incorporate a supply cord having a nominal cross-sectional area of 0.75 mm², if the length is less than 2 m.

25.22 Addition to **25.22** of **JIS C 9335-1**:

For appliances which may cause such injury as burn especially when excess tension is applied to the supply cord, magnetic plugs may be used.

25.101 Supply cords of kettles and electric thermal insulation pots shall not be longer than 75 cm, unless they are helically coiled. Appliances employing magnetic plug are exempted from this requirement.

Compliance is checked by measurement.

If a cordless kettle has a cord storage facility, the length of the cord is measured after storing as much of the cord as possible.

NOTE : The length of the cord is measured between the plug and the point where the cord or cord guard enters the appliance.

26 Terminals for external conductors Terminals for external conductors shall be as stated in clause **26** of **JIS C 9335-1**.

27 Provision for earthing Provision for earthing shall be as stated in clause **27** of **JIS C 9335-1**.

28 Screws and connections Screws and connections shall be as stated in clause **28** of **JIS C 9335-1**.

29 Clearances, creepage distances and solid insulation Clearances, creepage distances and solid insulation shall be as stated in clause **29** of **JIS C 9335-1** except as follows.

29.2 Addition to **29.2** of **JIS C 9335-1**:

The microenvironment is pollution degree 3 if the insulation can be polluted by condensation from steam produced during normal use of the appliance.

30 Resistance to heat and fire Resistance to heat and fire shall be as stated in clause **30** of **JIS C 9335-1** except as follows.

30.1 Addition to **30.1** of **JIS C 9335-1**:

For coffee-makers, egg boilers, kettles and steam cookers, the temperature rises occurring during the tests of **19.4**, **19.5** and **19.101** are not taken into account.

30.2 Addition to **30.2** of **JIS C 9335-1**:

For water distillers and appliances intended to maintain liquid or food at a particular temperature, **30.2.3** is applicable. For other appliances, **30.2.2** is applicable.

31 Resistance to rusting Resistance to rusting shall be as stated in clause **31** of **JIS C 9335-1**.

32 Radiation, toxicity and similar hazards Radiation, toxicity and similar hazards shall be as stated in clause **32** of **JIS C 9335-1**.

Annexes

The annexes of **JIS C 9335-1** are applicable except as follows.

Annex C (normative) **Ageing test on motors**

Modification:

The value of p in table C.1 is 2 000.

Annex 1 (informative)

Comparison table between JIS and corresponding International Standard

| JIS C 9335-2-15 : 2004 <i>Household and similar electrical appliances—Safety—Part 2-15: Particular requirements for appliances for heating liquids</i> | | | | | ISO 60335-2-15 : 2002 <i>Household and similar electrical appliances—Safety—Part 2-15: Particular requirements for appliances for heating liquids</i> | | |
|--|--|------------------------------------|--|---|--|-------------------------------|---|
| (I) Requirements in JIS | | (II) International Standard number | (III) Requirements in International Standard | | (IV) Classification and details of technical deviation between JIS and the International Standard by clause Location of deviation: text Indication method: dotted underlines | | (V) Justification for the technical deviation and future measures |
| Clause | Content | | Clause | Content | Classification by clause | Detail of technical deviation | |
| 1 Scope | Safety of electrical appliances for heating liquids for household and similar purposes their rated voltage being not more than 250 V | IEC 60335-2-15 | 1 | Same as JIS. But rice cookers and electric thermal insulation pots are added in JIS. | MOD/ addition | — | In JIS, rice cookers and electric thermal insulation pots which are used in Japan, are defined and their application is made clear. |
| 2 Normative references | As stated in JIS C 9335-1. | IEC 60335-2-15 | 2 | Same as JIS. | IDT | — | |

| (I) Requirements in JIS | | (II) International Standard number | (III) Requirements in International Standard | | (IV) Classification and details of technical deviation between JIS and the International Standard by clause Location of deviation: text Indication method: dotted underlines | | (V) Justification for the technical deviation and future measures |
|--------------------------------|--|------------------------------------|--|---|---|---|---|
| Clause | Content | | Clause | Content | Classification by clause | Detail of technical deviation | |
| 3 Definitions | <p>Normal operation of each product, definitions of products</p> <p>3.1.9.105 Pressure cookers excluding rice cookers are operated in accordance with the instructions but with the container filled with water to a depth of 25 mm.</p> <p>3.201 Rice cooker Appliance which mainly cooks rice automatically utilizing electric heat. Appliance having function to keep the temperature is included.</p> <p>3.202 Electric thermal insulation pot Appliance which consists of integrated heater and container, boils water utilizing electric heat, then automatically transfers to function for keeping temperature.</p> | IEC 60335-2-15 | 3 | <p>3.1.9.105 Pressure cookers are operated in accordance with the instructions but with the container filled with water to a depth of 25 mm.</p> <p>No definitions for rice cookers and electric thermal insulation pots.</p> | MOD/ alteration and addition | <p>JIS defined rice cookers and electric thermal insulation pots which are not taken into account in IEC, and excluded rice cookers from normal operating conditions of pressure cookers. Electric thermal insulation pots are identified from kettles in such a way that the user may apart from the former under use.</p> | Treatment of rice cookers and electric thermal insulation pots is made clear. |
| 4 General requirement | Rules for safety | IEC 60335-2-15 | 4 | Same as JIS . | IDT | — | |

| (I) Requirements in JIS | | (II) International Standard number | (III) Requirements in International Standard | | (IV) Classification and details of technical deviation between JIS and the International Standard by clause Location of deviation: text Indication method: dotted underlines | | (V) Justification for the technical deviation and future measures |
|---|---|------------------------------------|--|---|---|--|---|
| Clause | Content | | Clause | Content | Classification by clause | Detail of technical deviation | |
| 5 General conditions for the tests | Sample size, test sequence, etc. | IEC 60335-2-15 | 5 | Same as JIS . | IDT | — | |
| 6 Classification | Wash boilers and livestock boilers shall be at least IPX3. | IEC 60335-2-15 | 6 | Same as JIS . | IDT | — | |
| 7 Marking and instructions | Mark of water level corresponding to rated capacity Marking on stand for cordless kettle Contents of warning stated on instruction for each appliance | IEC 60335-2-15 | 7 | Same as JIS . However no application to electric thermal insulation pots. | MOD/ addition | In JIS application to electric thermal insulation pots is made clear. | |
| 8 Protection against access to live parts | Inspection by test finger and test pin | IEC 60335-2-15 | 8 | Same as JIS . | IDT | — | |
| 9 Starting of motor-operated appliances | Not applicable | IEC 60335-2-15 | 9 | Same as JIS . | IDT | — | |
| 10 Power input and current | As stated in JIS C 9335-1 . | IEC 60335-2-15 | 10 | Same as JIS . | IDT | — | |

| (I) Requirements in JIS | | (II) International Standard number | (III) Requirements in International Standard | | (IV) Classification and details of technical deviation between JIS and the International Standard by clause Location of deviation: text Indication method: dotted underlines | | (V) Justification for the technical deviation and future measures |
|---|---|------------------------------------|--|--|---|--|---|
| Clause | Content | | Clause | Content | Classification by clause | Detail of technical deviation | |
| 11 Heating | Set-up conditions, test duration, test voltage, points of temperature measurements, etc. are specified. Test duration of pressure cookers excluding rice cookers is 15 min after attaining the maximum cooking pressure. | IEC 60335-2-15 | 11 | Same as JIS . However, distinction between rice cookers and pressure cookers is not clear. | MOD/ addition | In JIS pressurized rice cookers are excluded from pressure cookers. | The pressure of pressurized rice cookers is not so large, therefore it is reasonable to specify the time until the rice is cooked as compared with applying of test duration for usual pressure cookers. But such a fact is not assumed in IEC Standard. |
| 12 Void (no specification) | No specification | IEC 60335-2-15 | 12 | Same as JIS . | IDT | — | |
| 13 Leakage current and electric strength at operating temperature | As stated in JIS C 9335-1 . | IEC 60335-2-15 | 13 | Same as JIS . | IDT | — | |
| 14 Transient overvoltages | Alternative test by means of impulse test for the part where the specified value of clearance is not satisfied. | IEC 60335-2-15 | 14 | Same as JIS . | IDT | — | |

| (I) Requirements in JIS | | (II) International Standard number | (III) Requirements in International Standard | | (IV) Classification and details of technical deviation between JIS and the International Standard by clause Location of deviation: text Indication method: dotted underlines | | (V) Justification for the technical deviation and future measures |
|--|--|------------------------------------|--|--|---|---|---|
| Clause | Content | | Clause | Content | Classification by clause | Detail of technical deviation | |
| 15 Moisture resistance | Spillage test, moisture resistant test, test for immersion into water at cleaning, spillage test of stand and spillage test of rice cookers. | IEC 60335-2-15 | 15 | Same as JIS . But no spillage test on rice cooker from which the container is removed. | MOD/ addition | In JIS , test method for appliances whose container is detachable (confirmation by electric strength test, visual check, etc. while water is poured onto the appliance body with internal pan being removed) is added. | In IEC , safety test for rice cookers is not taken into account, therefore JIS adds water spillage test equivalent to that stated in Clause 1 of Ministerial Ordinance in Electrical Appliance and Material Safety Law. |
| 16 Leakage current and electric strength | As stated in JIS C 9335-1 . | IEC 60335-2-15 | 16 | Same as JIS . | IDT | — | |
| 17 Overload protection of transformers and associated circuits | As stated in JIS C 9335-1 . | IEC 60335-2-15 | 17 | Same as JIS . | IDT | — | |
| 18 Endurance | Not applicable | IEC 60335-2-15 | 18 | Same as JIS . | IDT | — | |
| 19 Abnormal operation | Limiting of heat dissipation, short circuit test of thermal cut-out of kettle, etc. | IEC 60335-2-15 | 19 | Same as JIS . However, no application to electric thermal insulation pots. | MOD/ addition | Application to electric thermal insulation pots is made clear. | |

| (I) Requirements in JIS | | (II) International Standard number | (III) Requirements in International Standard | | (IV) Classification and details of technical deviation between JIS and the International Standard by clause Location of deviation: text Indication method: dotted underlines | | (V) Justification for the technical deviation and future measures |
|-------------------------------------|--|------------------------------------|--|--|---|--|---|
| Clause | Content | | Clause | Content | Classification by clause | Detail of technical deviation | |
| 20 Stability and mechanical hazards | As stated in JIS C 9335-1 . | IEC 60335-2-15 | 20 | Same as JIS . | IDT | — | |
| 21 Mechanical strength | Impact hammer test is not applicable to glass parts without relation to protection against electric shock and ingress of water. | IEC 60335-2-15 | 21 | Same as JIS . | IDT | — | |
| 22 Construction | Construction in general, size of drain holes, over-pressure test of espresso coffee-makers and pressure cookers, switching test of coupler of cordless kettles, limiting of boiling water flow, and limiting of sudden steam jet from kettle | IEC 60335-2-15 | 22 | Same as JIS . However, no application to electric thermal insulation pots. | MOD/ addition | Application to electric thermal insulation pots is made clear. | |
| 23 Internal wiring | Flexural test of internal wiring and so on | IEC 60335-2-15 | 23 | Same as JIS . | IDT | — | |
| 24 Components | Switching tests of switches and automatic controls Specification of thermal devices incorporated in couplers, etc. | IEC 60335-2-15 | 24 | Same as JIS . | IDT | — | |

| (I) Requirements in JIS | | (II) International Standard number | (III) Requirements in International Standard | | (IV) Classification and details of technical deviation between JIS and the International Standard by clause Location of deviation: text Indication method: dotted underlines | | (V) Justification for the technical deviation and future measures |
|--|--|------------------------------------|--|--|---|---|---|
| Clause | Content | | Clause | Content | Classification by clause | Detail of technical deviation | |
| 25 Supply connection and external flexible cords | Kind, sectional area and length of supply cords, use of magnetic plugs, etc. | IEC 60335-2-15 | 25 | Same as JIS . However, no statement for use of magnetic plugs. | MOD/ addition | 25.8 In JIS , a length exceeding 75 cm is allowed when magnetic plugs are used. 25.22 JIS clearly accepted use of magnetic plugs. Application of magnetic plug to electric thermal insulation pots is clearly stated. | IEC 60320-1 does not admit use of magnetic plugs, however JIS admits use of magnetic plugs for only appliances which may cause burns as a result of hooking supply cord, for prevention of burns (actually only appliances of 100 V for which earth wire is not required are in service). When style of service in Japanese house (place on TATAMI) is taken into account, magnetic plugs are necessary as a countermeasure to prevent risk of burns. The length is not limited because the appliance will not turn over even if the supply cord is hooked. |
| 26 Terminals for external conductors | As stated in JIS C 9335-1 . | IEC 60335-2-15 | 26 | Same as JIS . | IDT | — | |
| 27 Provision for earthing | As stated in JIS C 9335-1 . | IEC 60335-2-15 | 27 | Same as JIS . | IDT | — | |

| (I) Requirements in JIS | | (II) International Standard number | (III) Requirements in International Standard | | (IV) Classification and details of technical deviation between JIS and the International Standard by clause Location of deviation: text Indication method: dotted underlines | | (V) Justification for the technical deviation and future measures |
|--|---|------------------------------------|--|----------------------|---|-------------------------------|---|
| Clause | Content | | Clause | Content | Classification by clause | Detail of technical deviation | |
| 28 Screws and connections | As stated in JIS C 9335-1 . | IEC 60335-2-15 | 28 | Same as JIS . | IDT | — | |
| 29 Clearances, creepage distances and solid insulation | Clearances, creepage distances and thickness of solid insulation Pollution degree 3 is applied. Recess of plug receptacle of cordless kettles is specified. | IEC 60335-2-15 | 29 | Same as JIS . | IDT | — | |
| 30 Resistance to heat and fire | Ball pressure test, glow-wire test and needle-flame test | IEC 60335-2-15 | 30 | Same as JIS . | IDT | — | |
| 31 Resistance to rusting | As stated in JIS C 9335-1 . | IEC 60335-2-15 | 31 | Same as JIS . | IDT | — | |
| 32 Radiation, toxicity and similar hazards | Not specially specified. | IEC 60335-2-15 | 32 | Same as JIS . | IDT | — | |
| Annexes | As stated in JIS C 9335-1 . Provided, the value of p (duration of current) in table C.1 is 2 000. | IEC 60335-2-15 | Annexes | Same as JIS . | IDT | — | |

Designated degree of correspondence between **JIS** and International Standard: MOD

- Remarks 1 Symbols in sub-columns of classification by clause in the comparison table indicate as follows:
- IDT: Identical in technical contents.
 - MOD/addition: Adds specification item(s) or content(s) not included in International Standard.
 - MOD/alteration: Alters the specification content(s) included in International Standard.
- 2 Symbol in column of designated degree of correspondence between **JIS** and International Standard in the comparison table indicates as follows:
- MOD: Modifies International Standard.

Bibliography

The bibliography of **JIS C 9335-1** is applicable except as follows.

- JIS C 9335-2-13 *Safety of household and similar electrical appliances—Part 2-13 : Particular requirements for deep fat fryers, frying pans and similar appliances*
- JIS C 9335-2-21 *Safety of household and similar electrical appliances—Part 2 : Particular requirements for storage water heaters*
- JIS C 9335-2-35 *Safety of household and similar electrical appliances—Part 2-35 : Particular requirements for instantaneous water heaters*
- JIS C 9335-2-54 *Safety of household and similar electrical appliances—Part 2-54 : Particular requirements for surface-cleaning appliances employing liquids*
- JIS C 9335-2-74 *Safety of household and similar electrical appliances—Part 2-74 : Particular requirements for portable immersion heaters*
- JIS C 9335-2-75 *Safety of household and similar electrical appliances—Part 2 : Particular requirements for commercial dispensing appliances and vending machines*

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